

Abstract of the Disclosure

The subject invention concerns new methods which make it possible, for the first time, to grow functional islets in *in vitro* cultures. The subject invention also concerns the use of the *in vitro* grown islet-like structures for implantation into a mammal for *in vivo* therapy of diabetes. The subject invention further concerns a process using the *in vitro* grown islet implants for growing an organ *in vivo* that has the same functional, morphological and histological characteristics as those observed in normal pancreatic tissue. The ability to grow these cells *in vitro* and organs *in vivo* opens up important new avenues for research and therapy relating to diabetes.